Better Crops

The Pocket Book of Agriculture

January 1925 10 Cents

What About the Consumer? by Frank George—Articles by C. E. Baker—C. T. Gregory—M. J. Heppner—Ed Howe

The extra ounce—

DASHING to the tape, wearied runners lag behind, while the man with *the extra ounce* of energy leaps ahead.

You've probably watched that extra ounce of energy come into play, not only in the field meet, but also in the productiveness of your own soil.

When soil is rich and well balanced in plant foods, it leaps ahead in production and nets you bigger profits.

For example, in Illinois there is a striking proof of what the extra ounce of plant food energy will do. For fifteen years official experiments were conducted at Odin Field on the typical gray silt loam of southern Illinois. The rotation was corn, wheat and a legume. To one plot was applied phosphoric acid, lime and crop residues. To another all these plus 100 lbs. of sulfate of potash.

The fifteen years' annual average yield of two crops: corn and wheat on the plot where potash was added showed an increase in corn of 17.8 bushels per acre and in wheat of 3.3 bushels per acre over the plot where no potash was used. The cash value of this increase at current market prices is $22.25 or an average increase of $11.13 per acre each year.

On this basis $3 worth of potash per acre gave a profit of $8.13 per acre over the no-potash plot.

As this case illustrates, potash is oftentimes the plant food that gives the soil the extra ounce of energy necessary for real profit. Specify Genuine German Potash in the fertilizer for your next crop. *It pays!*

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Better Crops

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VOLUME III NUMBER FIVE

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Still flowing on . . .

Better Crops

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Jeff poses a startling question and tries to find the answer.

IS HONESTY *POSSIBLE?*

By Jeff McDermid

CENTURIES ago an old Greek Philosopher, Diogenes, used to prowl around the streets of Athens at night with a lantern in his hand. "What's the big idea?" the Athenian cops would ask him. "I'm looking for an honest man," said Diogenes and continued his search.

There is no record that he ever found a man who answered to his specifications. That may be because he was a cynic, the kind of a man who knows the price of everything but the value of nothing.

But there are times when I feel a strong sympathy for Diogenes. Men give a lot of lip-service to the ideal of Honesty, but when it comes time to give a real demonstration of it, they ask to be excused.

Here is a man who promises to do certain things which he has no intention of performing. Here is

another who lies for fear he will lose his job. Here is another who must always exaggerate facts just for the sheer pleasure of making his hearers gape.

The acid test of reality eventually exposes their shams. Lies, deceit, concealment, falsehood and deception at every hand! The worm of doubt begins to gnaw. Like Diogenes, I ask "Where is a really honest man?"

Such questions are best answered by examining one's own self. The flaws we detect in others are oft-times reflections of our own. Unlike Diogenes, I will start the search by questioning myself. Perhaps I can find some explanation under my own scalp.

SO I ask myself, "Am I always honest?"

Naturally my impulse is to answer "Yes." Every man wants to think well of himself. I am no exception.

But I am on the trail of honesty. The first essential, then, is to be honest with myself. So I must answer "No."

Last week a man asked me to do him a service. It meant a lot to him. I wanted to please him. I consented.

But, in my heart of hearts, I disagreed with him. The thing seemed impracticable and unworkable. It hung threateningly over my head. I tried to shift it to other people. I neglected it. Finally, in a kind of desperation, I performed it in a hasty, perfunctory fashion. I knew it wouldn't succeed. It didn't.

No one can accuse me of dishonesty. I did, what I agreed to do. But, being honest with myself, I know that I should have gone to the man, explained my objections, and, if he persisted, declined to undertake the work. My excuse is that I had a good motive—I wanted to please him and help him. I was afraid of wounding his feelings by being strictly honest with him.

THE first and greatest enemy of honesty is fear. If you collected all the untruths that are told in the world and the *reason* for them, fear, I am sure, would predominate. Fear of losing one's job, fear of making an enemy, fear of what people will say. And, once we get the habit of giving in to fear, how easy to justify it. After all, that only makes us like the majority of mankind.

What we call deliberate dishonesty, I think, is rare. Occasionally people do get tempted or driven to the point where they commit a consciously dishonest act. But there is something honest about this kind of dishonesty. At least the man *knows* he is being dishonest. He is honest enough to recognize that fact, whatever motives he may plead for it.

The real danger is from the people who are capable of only a semi-dishonesty. They tell only the things that reflect to their credit. They pass over such facts as might injure them. Yes, I know you'll say it's human nature to do that. We're all guilty on that count. But the virtue of honesty lies in telling the truth when you least want to.

THEN there is the dishonesty that springs from an over-luxuriant imagination. Most people of this type have creative temperaments that are out of control. I have known some delightful liars of this class—men who could take a few bare facts and exaggerate them into an amazing epic. Every man wants to be a hero to himself. When he has to face the grim facts of life, he gilds them over with his imagination and basks in their reflection.

You remember that fish you

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How I Use Demonstration Teams *to* Promote Projects

By *Stewart Leaming*
County Agent, Richmond, Miss.

"Of all occupations," said Dean Davenport, "farming is richest in facts and poorest in comprehension." Here is the story of a county agent who has found a successful method of getting the facts across to the farmers.

ONE of the problems that I have always had, as an Extension Agent, is to get really worthwhile material before groups of people. I have been somewhat disappointed at times when, after a cooperator has carried on an especially valuable piece of work, a meeting has been called and properly advertised and I have invited a specialist out to a meeting, to find a comparatively small group of people interested enough to drop their work and attend the meeting.

I remember especially one night last spring, when we had gone to a good deal of trouble to present a certain project in the best way we knew how, we found that a free medicine show had the crowd and our attendance was nil. This has not been an isolated case in my county nor, I understand, throughout the country.

Unless it can be brought to the person who needs it, the best piece of extension work has a very limited value.

We are not alone in this problem. During the summer months ministers often speak to empty benches while the summer resorts are thronged with pleasure seekers. A high class musical may draw a small audience while the movie show may be packed.

We have the problem not only of developing valuable work but getting it before the people cheaply and effectively.

IT was Mr. J. W. Burch, Animal Husbandry Specialist of the University of Missouri, who first called my attention to the possibilities of club demonstration teams. Previously, I had looked upon the development of a good team from the standpoint that the boys or girls were learning something which would be valuable to themselves when they had, in later life, occasion to appear before the public. When Mr. Burch came back from the War Eagle Camp at Sioux City he called my attention to the fact that the greatest value of the demonstration team was not, perhaps, in the training of the members themselves but as a means of teaching adults worthwhile practices which should be adopted in the neighborhood in which they live.

"A little child shall lead them." A successful demonstration staged by the club members is couched in

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How About *the* Consumer?

By Frank George
U. S. Department of Agriculture

(The consumer complains about the high price of farm produce. Can the farmers help him to get it cheaper?

EACH person in New York City eats on the average about two apples a week. He eats about two oranges a week. There are literally hundreds of thousands of people in this great metropolis who do not know the taste of grapefruit, to whom a bunch of grapes is a holiday rarity, and who wouldn't know a honeydew melon if they saw one. They use lemons to "cut a cold," and regard peaches, pears and other fruits as luxuries.

WHY?

The simple truth is that the cost of these things is considered too high to be included in the average daily diet. The average New Yorker, Chicagoan, Philadelphian, *et al,* is a middle-class fellow like the rest of us. He feels that he can't afford to eat any quantity of apples and oranges at 5 to 10 cents a piece, grape fruit at 15 cents, grapes at 30 cents a pound. And you can't blame him very much.

Various studies of food costs bring out the fact that it sometimes costs two and three times as much to distribute the products as it does to produce them. Statistics are produced to show where the money goes,—that the retailer, for example, works on such and such a margin, the jobber, wholesaler, railroad and producer each on a certain margin. On the other hand, statistics are adduced to show that each of these agencies is making little, if any, money.

"Service" of various sorts, demanded by everyone along the line takes a big slice out of the consumer's dollar. The wages and rents of everybody have gone up. Transportation costs more. Great use is made of credit. Long hauls require special precautions against spoilage. And so on.

A recent study of the distribution of Northwestern fancy winesap apples in New York City, made by the Federal Department of Agriculture, showed that the retailer operates on a margin of 37.4 cents out of every consumer dollar; that the jobber's margin is 9.8 cents; the wholesaler's margin 7.8 cents; transportation 16 cents; the shipping organization gets 5.4 cents, and the grower 23.6 cents. All these margins are gross margins from which must be deducted all operating costs before any profit is shown.

The retailers were individually owned grocery stores which extend credit and delivery service to their customers. The average retail price was $5 a box. The retailer paid

Grading and an attractive pack go far towards increasing consumption.

$3.13 a box to the jobber, thus giving the retailer an operating margin of $1.87 a box. Out of this margin is paid the costs of store maintenance, credit and delivery, wrapping, loss, shrinkage, and any profit. The retailer pays transportation cost from the jobber's place of business to the retailer's store, clerk hire, delivery service, credit including losses from bad debts, loss and shrinkage in quantity or quality of apples, and rent or its equivalent in case the building is owned by the retailers.

The jobber paid $2.64 a box for the fruit, and deducting this from the price of $3.13 to the retailer, he had a margin of 49 cents a box. This margin is for maintenance of store and delivery facilities, credit expense, loss and shrinkage. The cost of transportation to the jobbing centers by the jobber's own trucks or by public trucks varies from 6 to 11 cents a box according to distance from the wholesale market.

The wholesaler's margin was found to be 39 cents a box, out of which he pays any additional freight charges for extra service such as demurrage or storage in transit; cold storage charges, unloading and handling expenses, charges for delivery to jobber's trucks, maintenance or rental of place of business, credit, loss and shrinkage.

The survey showed that 55 cents out of every dollar paid by the consumer was for distributing the fruit after it had landed in the terminal market. Another 16 cents went for bringing the fruit from the Pacific Coast. Thus, 71 cents out of every dollar the consumer paid was for distribution, entirely apart from the cost of production, grading and packing. This is the result of a complex marketing system in which the demand for service is greater today than ever before in history.

Numerous public and private educational institutions are doing a good work in their studies of food distribution and margins. But now that we have the facts, what's to be done about the situation? Are we certain that there are too many middlemen? If so, who shall say that this jobber or that wholesaler shall go out of business? Or that such and such a practice must stop? These things can't be legislated out of existence. The very fact that

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Making CABBAGE PAY

By T. Denise

¶Sound methods of fertilization mean profits for the cabbage growers.

THE possibilities of a large income from a small acreage are probably greater in the raising of cabbage than any of our well known garden or truck crops. Of course, as with all other crops, the market is subject to extreme fluctuations, and there are times when the price drops to an unprofitable point for the producers. This is a hazard that has to be taken, however, in the production of any crop and the chances of extreme depressions in the cabbage market are not greater than with other crops. On the other hand, there is probably less danger of loss by low prices in the production of cabbage than with other crops, because of the fact that the yield of cabbage per acre can be raised to an almost unbelievable point, thus overcoming to some extent the evil effect of low prices. For this reason it has gained great popularity with gardeners possessing only a few acres as well as with farmers who have large estates and raise it only as a side issue. In a few localities the growing of cabbage in large quantities has been taken up and large acreages are devoted to cabbage every year by the growers in such communities. In such instances the industry becomes much specialized, and usually the most advanced ideas as to fertilization and general production are in practice. As a truck crop cabbage responds readily to the most intensive treatment, and its yield will be in proportion to the care and attention given the crop in the matter of preparing the soil and supplying proper cultivation and fertilizers.

We present here very briefly some of the points which are most important in the successful handling of this crop.

CABBAGE will flourish on most any of the usual types of soil. Of course, methods of production must be modified to suit the soil conditions. Large crops are grown on the comparatively light sandy types of soil as well as on the heaviest clays. When grown on the sandy or light loamy types, particular care must be taken to building up the humus supply and practically all the plant food has to be furnished artificially. On the clayey types the humus supply is equally important, but these soils are naturally more fertile than the sandy or loamy soils. Where cabbage is grown on a clayey soil, particular care must be given to the matter of cultivation. Frequent cultivation is necessary to preserve moisture and good tilth, but it must be remembered that clay soils can not be worked to advantage when too wet. If this is attempted,

puddling will follow and the soil will be in an unfriable condition for the rest of the season. If cultivation is attempted on a clay soil that is too dry, it will simply leave it a mass of lumps which will interfere with tillage for the rest of the season. The matter of the proper time to cultivate is one of judgment on the part of the grower. Every farmer knows the peculiarities of his own soil, and his past experience will tell him when cultivation can be safely undertaken.

Frequent, thorough cultivation is very essential in growing cabbage, especially in the early portion of the season. It preserves moisture, promotes a reaction of the soil and is conducive to the easy assimilation of plant food by the crop.

THE most successful cabbage growers use large quantities of manure. Manure is applied mainly for two reasons—to supply humus and plant food and to increase the water holding capacity of the soil. Any crop which uses such tremendous quantities of plant food, must of necessity require great quantities of water for its proper development, and this is true of cabbage. The amount of manure applied will depend largely upon the type of the soil and its condition at the time of application. On the average sandy or clay type of soil heavy amounts of manure, say 10 or 20 tons, may be applied with the assurance that the benefits will be somewhat in proportion to the application.

On the muck or slough soils, where cabbage growing has probably reached its most successful stage, it would, of course, be unwise to apply manure. In this case the soil is practically all organic matter, and the water holding capacity can not be improved on.

While the manure applied to the cabbage crop furnishes a large quantity of plant food, which is mostly nitrogenous, its principal function is to increase the humus supply and thus the water holding capacity of the soil in question.

The most profitable crops are grown by using the commercial forms of plant food, and the reason for this is clearly evident.

It is known that a yield of 30 tons per acre, which is not unusual, will remove from the soil 270 lbs. of Potash, 70 lbs. of Phosphoric Acid and 200 lbs. of Nitrogen. To gain some idea of what an enormous quantity of plant food this is, let us compare it with a 35 bushel wheat crop which removes 31 lbs. Potash, 24 lbs. Phosphoric Acid and 59 lbs. Nitrogen. We see that it takes from the soil about 9 times as much Potash, 2½ times as much Phosphoric Acid and more than 3½ times as much Nitrogen.

This shows what a heavy drain would be made on the soil by several crops of cabbage in comparison with the other farm crops. In the face of these facts it might seem an almost impossible feat to maintain the fertility of the soil and at the same time grow many crops of cabbage. It may be easily accomplished, however, and the fertility not only maintained but increased. It is simply a matter of knowing how.

Aside from the fact that cabbage is a particularly heavy feeder, we must bear in mind that its root system is not, by any means, extensive. It does not range widely through the soil for its food as does corn or some of the other grain crops. Compared with other farm crops, the root system of the cabbage plant is small and this is an added argument for the use of concentrated fertilizer.

By using commercial fertilizers we are not only enabled to regulate the amount needed according to our knowledge of the former productiveness of the soil, but we can furnish the necessary material in a readily available form. We can

Stand of cabbage on unfertilized plat of Maas experiment.

furnish it at the place where it is required, in the amounts that are right, and at the time when the crop most needs it.

The logic of using commercial forms of plant food, we believe, is plain. We now come to the consideration of *what* plant food to use. In this we are guided by three main considerations. The amount of plant food removed by the crop as shown by the above quotation of a chemical analysis; the present fertility of the soil based on past experience, and upon the amount of manure applied, and finally by the experience of other growers. The latter is probably the most reliable means of determining what to use

To show that the recommendations are sound and that the use of the proper fertilizers is profitable under actual test, we submit the experience of two men in different parts of the country who are now using fertilizers on cabbage with much success.

A few years ago Mr. Thos. Burkhardt of Meadowlands, Minnesota, became interested in fertilizers and the following season carried on the simple experiment here described. He says "There is only one way to determine the true value of a fertilizer. That is, by actually using it

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Stand of cabbage on plat where 1,000 lbs. of a 4-8-10 fertilizer was applied in Maas experiment.

Shall We Dust the Apple Orchard?

By C. E. Baker
Purdue University Agricultural Experiment Station

¶The relative merits of spraying and dusting as determined by experiments.

DURING the past twenty-five years the possibilities of dusting as a substitute for liquid spraying have been intermittently brought to the attention of the fruit growers. During the first decade of this period, powdered copper compounds were used as fungicides and paris green was used as the insecticide. This period resulted in nothing of value and for several years dusting was practically unheard of. With the successful advent of liquid lime sulfur as a fungicidal spray, the possibilities of finely ground flowers of sulfur applied as a dust, again aroused interest in the subject of dusting. About this time, also, powdered arsenate of lead was supplanting the paste form and this, combined with the sulfur dust, seemed to make a rather complete combination for both insects and diseases.

During the period 1910-1918 sulfur-lead dusts were used in different combinations and with varying degrees of success. Favorable results were reported from New York, but less favorable results followed their use in West Virginia and Illinois.

TO determine the possibilities of dusting under Indiana conditions, experiments were begun in 1918 in a Ben Davis orchard, near Peru, Indiana. A block of 144 trees was divided into two plots of 72 trees each, one block being dusted and the other sprayed with liquid sprays. Another group of nine trees at the end of the block was left as checks and received no treatment of either kind.

Apple scab was the only serious disease present at the time the work was begun. The Ben Davis variety is very susceptible to scab and one on which it is very difficult to control the disease. Codling Moth and Curculio were the most abundant insects.

The liquid spray used was lime sulfur applied at the dilution of one gallon of 32° Baume concentrate to 40 gallons of water and one pound of arsenate of lead to 50 gallons. The dust used was a sulfur-lead mixture in the proportion of 90 pounds of sulfur to 10 pounds of lead.

Five years' results from these investigations show that under our conditions liquid lime sulfur controlled apple scab more successfully than did the sulfur-lead dust. In years of very light scab infection, the dust was about equally as effective as the liquid spray as a control measure. The value of controlling apple scab is manifest in

two ways. First, the protection of the fruit from the blemishes caused by the disease, with the consequent decrease in the amount of marketable fruit. Second, the protection against defoliation of the fruit spurs by the disease (which also grows upon the leaves causing them to drop) which tends toward a reduction in the size and yield of fruit.

The fruit from the sprayed plot was consistently larger than the fruit from the dusted plot, although there was no difference in the size and general vigor of the trees in the two plots, with the mentioned exception of greater scab defoliation on the dusted plot. The difference in size of fruit is probably due to this condition, and is not a direct effect of the use of dust. Consequently, while sulfur dust may give satisfactory control of apple scab under some conditions, it apparently is not dependable as a control measure.

CONSIDERED from the standpoint of insect control, the dust compares very favorably with the liquid spray. During the first two years dusting gave slightly better control than spraying, and during the last three years spraying was more successful.

One of the advantages of dust under the conditions of these investigations was the fine finish of the dusted fruit. At times lime sulfur causes rather severe injury in the form of russeting of the fruit and burning of the foliage. This type of injury sometimes persists even after the addition of more lime. No russeting or other form of spray injury appeared upon the dusted fruit, and the apples that were free from insect and disease injury were smooth and clean.

The results of these investigations indicate the value of dusting under Indiana conditions as a supplementary control measure. As yet, dust cannot be substituted for all liquid sprays. This is evident from the fact that so far no dust has been developed to control scale. The rather poor showing of the dust in comparison with liquid sprays as a fungicide is also against its use. Although the only serious disease

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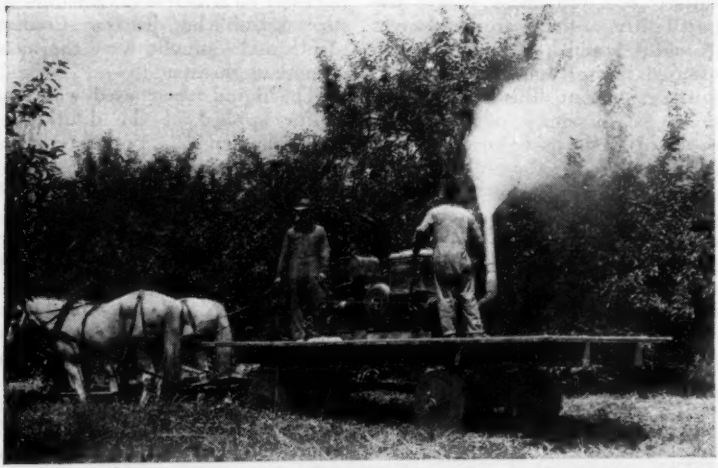

The type of dusting outfit used in these experiments. This makes a light load to haul through the orchard and does not require special trucks as it can be easily removed from wagon bed.

Breeding Plants *to* Resist Insect *and* Fungous Attacks

By M. J. Heppner
Division of Pomology, University of California

How the red-spider was outwitted in some almond tree experiments.

FRUIT growers, as well as all other tillers of the soil, have many troubles to contend with, but the question is often raised whether or not some of these troubles cannot be removed or nearly entirely so by the application of science to our already general knowledge of fruit and crop growing.

For instance, one of the greatest problems confronting orchardists and other crop growers is the successful control of insect pests, and the successful prevention of destructive fungous diseases. Each year millions of dollars are expended in keeping crop and tree plants free from the devastations caused by these insects and fungi. Many of our commercial fruits and crops have been developed by controlled breeding methods. The question is now raised, cannot fruits and other crops be bred so as to be free from insect and fungous attacks, at least to a certain degree? Of course this cannot be done in one year's time or in two.

In any breeding work long periods of time are required before completion of the undertaking. And in many cases, yes, most of them, negative results are obtained. However, positive results may be the reward for the years of labor expended, as has been the case time after time. By everlasting working we can accomplish things that at first seem almost impossible.

Take travel, for example. How many people believed ten years ago that some day it would be possible to travel across the continent in as short a period of time as the airplane has done it? And how many people dreamed that airplanes would be making a circle of the globe in as short a period of time as was recently done? Not many. Getting back to our topic, is it possible to develop types and strains of agricultural products that are immune or nearly so against insect and fungi ravages? It is the writer's opinion that such can be done and he offers the following as an example.

ONE of the most serious pests affecting California orchards is the red-spider. This is a very small pest and owing to its large numbers and small size is often very difficult to control. By sucking the sap from the leaves the tree is unable to function properly with the result that the tree's vigor is greatly reduced and the crops are materially lowered. In dry years, as the present one has been, the spider makes good headway as far as

damage is concerned, in view of the fact that the roots are unable to take up sufficient water to replace that removed by the spiders.

Although there are specific recommendations for the control of this pest, the orchardist is not always successful in warding off a spider attack. This pest is becoming of greater and greater importance each year and no doubt growers wish a tidal wave or something of that nature would hit the spider and wipe it from the face of the earth. Is it possible to develop fruits that are immune against spider attack? Let us read on a little further and see what has happened.

AT the present time the Division of Pomology of the University of California is carrying on a very extensive almond breeding experiment. There are well over one thousand trees in the experiment, most of which have borne at least one or more crops. Each tree was developed from seeds secured by hand pollination work, with the result that the exact parentage of each tree is known. Some of the many crosses made are as follows:—

Ne Plus Ultra	x	Harriott
Ne Plus Ultra	x	Drake
Nonpareil	x	Peerless
California Paper Shell	x	IXL
IXL	x	Ne Plus Ultra
Drake	x	Languedoc
Drake	x	Peerless
Reams	x	Texas
Languedoc	x	Drake
Nonpareil	x	Drake
Reams	x	California Paper Shell

These include most of the commercial varieties grown in California. The object in undertaking the experiment was to try and produce a nut of good quality, productive, and blooming late enough to escape the late spring frosts. Frost is one of the most limiting factors in successful almond production in view of the fact that the almond blooms earlier than all other deciduous fruits. It appears as though nature with its weather peculiarities and the red-spider work hand in hand. If nature spares the almond blossoms and allows the trees a chance to produce nuts, the spider generally comes along and does its damage by causing the leaves to fall. No leaves means no nuts so the grower must get busy and endeavor to prevent the spider from exacting its damage.

During 1922 some of the trees came into bearing for the first time. Observations throughout the summer showed that the trees developed from the Reams x California Paper Shell cross had characteristics not exhibited by any of the other trees. They had good nuts, were very productive and seemed to be able to withstand the attack of the red-spider. By the middle of the summer nearly all other trees had lost their leaves, thanks to the red-spider. But these particular trees would not give up. They stood out like a Rock of Gibraltar with their dark green leaves and splendid crop. Spiders were on the trees but this did not seem to worry the trees any.

IN order to check up this apparent red-spider resistance, the trees were carefully watched during the following summer (1923). And lo! the spider tried its best all during that time, but it was unable to affect these trees. Again, all other trees had their leaves on the ground long before natural shedding time, but this was not true with the promising trees. During 1923 another heavy crop was taken from these trees.

In view of the fact that the past winter and spring were very dry, it was believed that the trees would have to lay their cards on the table and give in to the spider. The soil was depleted of its water early in the growing season, and it was expected that not a leaf would remain on any of the trees due to the

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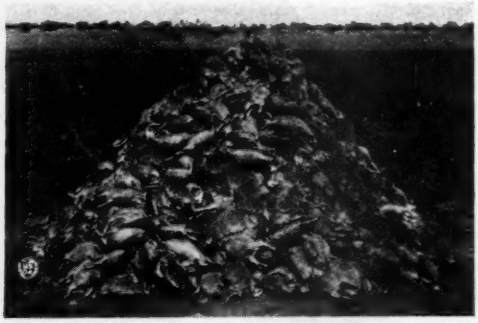
Better Crops' ART GALLERY of the month

Dr. S. O. Fladness, who on November 1 took up his duties as Agricultural Commissioner to Mexico with headquarters at the U. S. Consulate, Mexico City. He was formerly in the Bureau of Animal Industry, U. S. D. A.

Wise Byrnes, in charge of Gardens and Greenhouses for the U. S. Department of Agriculture, examining seed pods of an amaryllis, a plant which Mr. Byrnes and his father, lately retired after 22 years of service with the department, have done much in developing, especially in creating new colors. Mr. Byrnes hopes to be able to produce a fragrant amaryllis.

A pyramid of prairie dogs which shows the result of a campaign carried on in the locality of the West by the Biological Survey of the Department of Agriculture in co-operation with local people. In some sections the prairie dog is a very destructive pest and poison must be used to save the crop.



County Agent, W. G. Middlebrooks of Bibb County, Georgia, visiting a farmer's demonstration field of staked and unstaked tomatoes.

Record Yield *from* 35-Year Old Orchard

By *John A. Crawford*
Massachusetts Agricultural College

How to get the most out of fruit orchards is still a debated question. These experiments indicate that fertilizers of the right sort will increase the yield of apples.

A 35-YEAR old orchard of the Massachusetts Agricultural College in Amherst, Mass. has this year borne its record crop, 336.2 barrels from 60 trees. Dr. J. K. Shaw, the pomologist who devised the nursery stock identification system, and who had charge of this experiment in the past four years, considers the 1924 crop a highly satisfactory yield.

. Originally this block of trees was a potash experiment, set out by the late Dr. C. A. Goessmann in 1890. At that time potash was considered among plant foods as the chief determinant of the size of fruit crops. High potash fertilizers were used for many years. The five plots, each containing three Rhode Island Greening, Roxbury Russet, Baldwin, and Gravenstein trees, were treated with the following per acre dressings in their first three decades; plot one got 10 tons of manure; plot two got 2,000 pounds of wood ashes; plot three, a check plot, got nothing; plot four, 600 pounds of ground bone and 200 of muriate of potash; and plot five had 600 pounds of ground bone and 400 of low grade sulphate of potash.

The orchard lies on the blustery side of a high hill over which the sun shone only after it had been up for an hour or two hours. The trees were 30 by 40 feet apart on an acre and one half of ground. The soil was only fair, being a medium loam of moderate fertility, and it put a premium on good soil management.

It has been variously treated. From 1889 to 1893 it was intercropped. From 1894 to 1902 it was in sod and the grass was removed. Between 1902 and 1910 it had a sod mulch but from 1911 to 1920 it was strip-cultivated.

The trunk growth during this period was high, and in a sense made possible the record yield of the past season. As is now fairly well known, potash has little to do with the size of an apple crop.

NEARLY a decade ago, horticulturalists first put forward their support of nitrogen as an orchard feeder and after some trials, this old experiment orchard was fertilized on a different system. In 1921 and in following years, it has received the following per acre

doses; plot one, four tons of manure; plot two, 1,000 pounds of wood ashes and 300 pounds of nitrate of soda; plot three, as before, nothing, plot four, 100 pounds of muriate of potash, 150 of acid phosphate and 300 pounds of nitrate of soda; plot five, 100 pounds of sulfate of potash, 150 of acid phosphate and 300 of nitrate of soda. It has been strip-cultivated and cover-cropped.

The consequences of this treatment appear in the following tables on the set of fruit spurs and on the average per cent of bloom during 1923 and 1924.

Average per cent of Spur Set Per Plot in 1923 and 1924

	R. I. G.		Rox. R.		Bald.		Grav.	
	1923	1924	1923	1924	1923	1924	1923	1924
Plot 1..	67	44	52	39	77	78	88	61
Plot 2..	78	53	86	48	90	57	86	31
Plot 3..	44	25	27	37	88	66	..	33
Plot 4..	83	26	48	26	62	50	78	40
Plot 5..	76	31	60	49	93	86	73	47

Note the consistently higher percentage in plots one and five.

Average per cent of Bloom Per Plot in 1923 and 1924

	R. I. G.		Rox. R.		Bald.		Grav.	
	1923	1924	1923	1924	1923	1924	1923	1924
Plot 1..	60	83	65	77	40	28	25	85
Plot 2..	60	70	72	60	45	13	13	80
Plot 3..	17	37	20	43	6	6	1	77
Plot 4..	57	47	65	55	7	22	42	80
Plot 5..	58	67	65	60	8	40	8	80

THE yields from plots one and five in the past three years have consistently argued for treatments like those used on them. The niggardly results from plot three which yielded only 22 of the 336 barrels of the whole orchard last year leave no doubt as to the wisdom of fertilizing a bearing orchard when planted on New England soils. Not only was their bulk small, but they resembled the far pasture product known as the Lord's little apples.

The plot yields for 1924 were as follows: plot one, 98.1 barrels; plot two, 65.8 barrels; plot three only 22 barrels; plot four, 65.4 barrels; and plot five 86.2 barrels.

Dr. Shaw further notes that the Baldwins have yielded their best from the commercial fertilizers and the Greenings, Russets and Gravensteins from manure. Of the two fertilizer combinations with which the Baldwins were treated, the mixture containing the sulfate of potash was more productive than that with the muriate of potash. This distinction between forms of potash may not, however, apply generally.

The Pig and the Professor

By E. W. Howe

HERETOFORE I have never read an article on diet that did not make me uncomfortable. All writers on this subject tell us we must do certain things we cannot do, and call us pigs for neglecting them. But Thomas B. Osborne, connected with the Connecticut Agricultural Experiment Station, who has been referred to by a famous living chemist as one of the first authorities in the world on the subject of proteins and their different effects upon the animal organism, appears with a crumb of comfort. He says men are endowed with instincts which guide them so well that, under normal conditions of life, "they escape the many dangers that until recently they were unconscious of." ¶It is comforting to believe that I have natural instincts which lead me, careless man though I am, somewhere near the best and easiest way. ¶Even pigs have this valuable and natural intuition. Is it too much to hope that men have? The pig knows how to protect itself against dangers arising from indiscretions in eating, not only as to quality, but as to the proportion of the various food constituents. This is shown by Evvard's experiments. He allowed pigs to feed themselves at will from corn, meat-meal, oil meal, salts and the like, from separate hoppers. During early growth, when new tissues were being made rapidly, these pigs ate much larger proportions of protein than when growth became slower. Later, when smaller amounts of corn were eaten, the protein deficiency thus caused was met by an increase in the amount of meat-meal eaten. Under these conditions of self diet feeding, the pigs grew faster than any previously recorded which had been fed on mixtures made for them by the combined talent of agricultural experts, trained both in science of nutrition and in the practice of the art of feeding. Of all professors, those connected with scientific and agricultural colleges are most sensible and practical; they now teach that the best ration for pigs is the ration selected by the pigs themselves when free to follow their natural instincts. And I wish the dietary experts would permit me to do the same thing. ¶I thank Professor Osborne for his agreeable doctrine. If you are careful to eat slowly, and not too much, you are probably doing all that can be done to reach old age comfortably. ¶Does instinct also guide us in matters other than diet? Does it cause us to do the best we can in religion, sociology, democracy, politics, etc.? I hope so; I hope I have wise instincts I can neither sell, trade nor give away.

The Cedar Tree and the Apple

Make Poor Neighbors

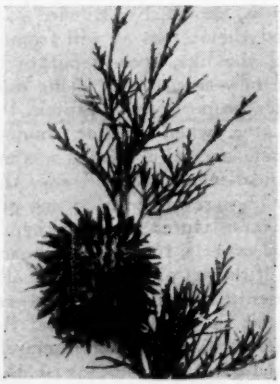
By C. T. Gregory

Purdue University Agricultural Experiment Station

¶Another fine article on an interesting subject from an old friend.

VIRGINIA has a law that declares the cedar trees to be a public nuisance or something of the sort. At any rate, folks there can be compelled by law to cut down cedar trees. In certain cases I expect this is a blessing, but in Indiana our orchardists get along rather successfully without such a law. The way some of them have of removing cedars, I believe, is unique in plant disease control. And if it is not unique, at least it is a good hunch well worth consideration by others.

A few years ago R. H. Simpson, of Vincennes, Indiana, became alarmed for the safety of the trees in his apple orchard. His neighbor had a fine stand of cedar trees and Mr. Simpson knew that his apples would not stand much chance against the rust disease with cedars so close by, a very serious situation for Simpson, but he handled it easily and effectively. He went to his neighbor, explained the situation and persuaded him to sell the cedar trees. This accomplished, Mr. Simpson immediately had all the offending cedars cut down. This was rather expensive, but it paid. We have records of orchardists who lost from $500 to $1,000 because of the presence of a few cedar trees.



A cedar apple—one-half the apple rust disease and the dispensable half.

Another effective and cheaper means of killing these undesirable cedar trees is with a plant poison, sodium arsenite. Cut notches in the trunk near the ground and pour about a tablespoonful of the pure liquid sodium arsenite into each wound, a simple treatment, but astonishing in its results. One man said about the treatment, "It's like dynamite."

(*turn to page 36*)

Making the FARM *Pay*

By L. C. Reynolds

¶A dairyman's views on soil improvement.

MAKING the farm pay is a stupendous problem with every individual farmer, one upon which to an immeasurable degree depends his happiness and prosperity When farming ceases to return a fair profit on capital invested on time and labor required to operate the business, farmers sell their land and move into town or lease their farms to renters, in either case, the profits from the soil gradually lessen until depleted and rundown farms are common in every locality and state in the nation.

Farming is so diversified in this country that it is impossible to point out in detail how to make farming in all its varied branches most profitable other than to lay down a few general principles which directly influence soil cultivation. The kind of farming that is profitable in one section of the country might prove the reverse elsewhere, consequently necessitating more or less personal study and familiarity with local conditions. However, soil conditions throughout the Middle West are much the same and a general method of soil improvement will in a large measure apply to general farm conditions.

There are a large number of vital factors entering into the problem of making the farm pay that cannot be treated at this time; therefore, I want to speak here in a specific way of soil improvement, as the soil is the farmer's resource and the basis upon which his prosperity inestimably depends. More failures to make the farm pay can be traced directly to improper soil management than to any other source. Farmers are too common in every locality who have, in their eager desire to become prosperous, cropped their soil to the point of unprofitableness and now find themselves unable to make the farm pay.

The initial factor of making the farm pay is to maintain the soil in proper balance, or in other words, to keep the plant food ingredients in the soil in their right relation to promote maximum production. On my farm, which is in many respects identical with thousands of other farms, I find that maintaining the vegetable matter in the soil is a vital essential in the growing of profitable crops. As I follow dairying as a specialty, I have a large quantity of stable manure to go back upon the land that materially assists in restoring organic matter to the soil. However, I know that stockless farming can be made profitable and the vegetable matter maintained in the soil through the growing and

(*turn to page 45*)

The author of this article—the third County Agent in Wyoming.

In the Old Days

By Allyn H. Tedmon

County Agent, Littleton, Colo.

If you want some measure of how County Agents work has developed in ten years, read these delightful reminiscences of one of the pioneers in the field.

COUNTY AGENTS, in the West at least, are generally young men, often right out of College. These young men, and older ones just starting in, little realize the way the work was done ten years ago.

County Agent work had its start in Colorado more than ten years ago. W. H. Lauck, the original and only "Bill" Lauck of El Paso County, Colorado, was, if I recall correctly, the first one. Then came D. C. Bascom and H. H. Simpson, in Logan and Boulder Counties, respectively. In Wyoming, the first man was A. L. Campbell, who started out on a motor bike at Lander in Fremont County, and H. E. McCartney held sway at Sheridan, in Sheridan County.

The third man to brave the wilds in Wyoming was myself, and I shall never forget the statement of Director A. E. Bowman, the night that he talked the job over with me. He said, "Now, imagine the worst looking place you can, and then when you get there you will find it worse than that." I went on the job taking both Big Horn and Washakie Counties. My headquarters were at Basin, in Big Horn County, and it was just about an even hundred miles from there to the No Wood store, down about half way across Washakie County.

Back in 1914, "Bill" Lauck,

State Leader Frear of Colorado, and myself, made the trip to the conference at Chicago. I hardly knew at the time what a County Agent was supposed to do, and after sitting around for a number of days, I found out that very few of those present had anything but a hazy notion.

IF I have ever had any success as a County Agent, I owe the most of it to dear old "Bill" Lauck. He sat up by the hour and told me of his experiences. He told me of one time, when he had not been on the job long and when people still thought that he was the prize grafter, of taking with him one of the most skeptical of his board of County Commissioners. This man, on the first blush, had thought a County Agent would be a fine thing for the farmers. However, when he noticed that all Lauck did was to drive and herd that Ford of his over the county roads, he changed his mind. Lauck, if he was nothing else, was a student of human nature. "Bill" Lauck could sell anything to any body I believe, for he sold County Agent work to that man, and this is how he did it.

Early one morning he called for the gentleman to go with him on a day's work. They left early for Lauck never let grass grow under his feet. A speedometor was of no use on Lauck's car, because he insisted on twisting off the drive chain. He drove too fast for one of the kind of that day and age.

Well, County Agent Lauck and his doubting Thomas spent the day sailing from one dry farm to another. Here "Bill" would leave a sack of seed corn. There he would climb down, and jerking out a wrench, would show some Chicago street car conductor how to adjust a plow. Next place he would leave a book or two from his original traveling library. Next place he did something else, until at last it was about to be dark and they were miles from home.

The man sat mum during the whole day. He said little, but his brains and eyes were very busy. At last along in the evening, Lauck drove up to the man's house and bade him goodnight. The man, in a dazed way, climbed out of the Ford and being hungry and tired from the days whirl stood a moment, and then manfully told Lauck that he was for him. And he was too, and so were all the rest, for in all the years that "Old Bill" Lauck spent in El Paso County, he was

(*turn to page 37*)

"Old Henry" bogged down in December.

The Editor's C

WELL, WHAT ABOUT THE CONSUMER?

In this issue of BETTER CROPS is an article by Frank George which asks a timely and pertinent question "What About the Consumer?" Ten or fifteen years ago that would have sounded like a joke. Farm produce ordinarily passed through so many hands before reaching the consumer that the farmer had little concern with the consumer.

Developments of the past ten years have been forcing the farmer and his ultimate customer closer together. One point that is being forcibly driven home, particularly to co-operative marketing associations, is that the consumer deserves a good deal of attention.

For several years past, while living in and around New York City, I have been observing things from the consumers' side of the fence. I haven't yet got over my indignation at the prices I have to pay for fruits and many vegetables. To pay ten cents a piece for apples when any farmer would give me a dozen for that price seems to me to indicate that something is rotten somewhere.

At first, I used to blame it on the fruit dealers here in New York—the wholesalers, jobbers and retailers. When you consider, for example, that a Georgia peach grower receives from 53 cents to $1.28 for 24 quarts of peaches while the consumer pays $7.50 for the same amount of peaches, you can't help wondering where the six or seven dollars difference goes. When you learn that $4.75 of that $7.50 goes for city distribution charge and waste, you begin to wonder why.

I have not sufficient evidence to defend or attack methods of distribution in New York City. My own impression is that they are far from ideal, and that prices are set with the idea of small turnover at large profit, whereas the whole

trend of distribution is towards large turnover at small profit. The point I want to make is that the grower has a measure of control over retail prices and that it is time he began thinking about exercising it.

A large part of the cost of distribution of farm products is due to their fluctuations as regards quality and supply. Ungraded fruit, variable quality, alternating glut and scarcity force fruit jobbers and retailers to take great risks. As a matter of sound business protection they must charge prices that will enable them to take these risks.

Marketing associations, as Mr. George shows in the case of the cranberry growers, have it in their power to decrease these risks and so lower the cost of distribution.

Every successful marketing association with which I am acquainted has done three things. It has standardized quality by careful grading. It has insured constant and dependable supply as far as possible and it has, by advertising and sales efforts, created consumer demand and consumer good will.

If a marketing organization does these things in a businesslike fashion, it is bound to exert a great control over retail prices. It can cut distribution costs and risks of handling farm produce to a minimum and it can and should see that these economies are passed on to the consumer in the shape of lower prices.

I believe that New York City alone would absorb three or four times as much farm produce as it does today if it were available at low prices. It is up to farmers' marketing associations to make their produce available to this great potential market at reasonable prices.

Jeff McDermid

Four $20 Prizes!

FOR the best article received on each of the following subjects, BETTER CROPS will award a prize of $20.

Read the conditions of the contest and then get busy on your story. The time is short but you have plenty of time to write an article that may win a prize.

SUBJECTS

The Importance of Raising High Yields at Low Cost
Why We Should Diversify Crops
The Value of Maintaining Soil Fertility
How Cost Account Records Help the Farmer

CONDITIONS *of the* CONTEST

Who is Eligible?—Any person connected in any way with the practice of agriculture may enter this contest. Manuscript must not exceed 800 words. Articles should be preferably typewritten on one side of white paper, but there will be no prejudice against articles not so written.

Contest Ending—The contest is open now.

It closes midnight Saturday, January 17th. Manuscripts bearing a postmark later than this time will not be eligible.

Basis of Award.—The basis of award will be on the excellence of presentation of facts. In the event of a tie, the full amount of the prize will be awarded to both contestants. One prize of $20 will be awarded to the best essay in each group. The judges reserve the right to withhold the award in the event that none of the articles submitted is deemed worthy of publication in BETTER CROPS.

Judges.—The judges of the contest are the editors, Jeff McDermid and Basil H. Pillard.

Method of Payment.—As the contest closes January 17, the awards will be announced in our February issue and checks mailed to the winners on February 1st, 1925.

Right to Publish.—The BETTER CROPS CORPORATION reserves the right to publish any manuscript submitted in this contest. Any manuscript so published outside of the prize winners will be paid for at the regular rate of one cent a word. No manuscripts submitted will be returned.

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By the Readers of Better Crops

Better Crops is a very welcome visitor in this office. "What Agriculture Needs" is to me an invitation. While neither new or original with me, it needs constant hammering away to get it generally recognized. That is "More business in farming." Marginal farms and farmers hang on when a similarly situated store or factory would go bankrupt, for a farmer seems to be able to exist without profit. Yet these marginal fellows are all that keep agriculture from showing a profit. Business methods applied to farming would help them to get into more profitable fields of endeavor and clear the way for a prosperous agriculture. Too few farmers keep records adequate to serve as a basis of management, and such accounts must precede real prosperity. Nine out of ten business ventures fail to become permanently successful institutions, the tenth has a system of books that not only record transactions but serve as a rudder into more prosperous waters. Farm bookkeeping is not complicated, but getting it accomplished is difficult. An intelligent farm management record on every farm would do more than all the laws that could be passed. All agriculture needs is common sense business methods.—*C. W. Mason, County Agent, Wheeling, W. Va.*

First: Use agricultural colleges to the limit. Educate by community. Organize by community. Organize by commodities. Federate by counties, states, districts, nationally. Federate by commodities the same way. Cooperate with all organizations, farmers and people in other occupations and with consumers. Harmonize all. Antagonize none if possible. Control production. Grade, standardize and market intelligently, storing surpluses. Market generally through cooperative agencies. Sell according to consumptive demands, fixing a price in keeping with costs and the law of supply and demand. *Last:* Use the agricultural college to the limit.—*E. J. Leonard, Fort Morgan, Colo.*

Here are my suggestions for a constructive program for agriculture. A postcard would not do. It seems to me that we should adopt a definite system of well balanced farming, which would include those crops which over a series of years would return us a maximum profit and maintain soil fertility. For this section it would mean the adoption of a crop rotation system balanced by a system of handling our livestock, which would consume practically all of the crops produced. For this section it would mean corn and wheat, oats and clover, with either dairy cattle or high grade beef cattle supplemented with some real good poultry. This kind of proposition if followed would get away from depression, maintain fertility, and would return those things which make farm life satisfactory.—*V. B. Sheldon, County Extension Agent, Maysville, Mo.*

More Acres of Legumes for Soil Improvement.—*O. B. Riggs, County Agent, Newport, Ind.*

We think you are wrong when you say, "There is something wrong with agriculture." It is industry which is out of balance and the proper adjustment of the prices of articles which farmers must buy will go farthest in bringing the proper solution. Three things which we believe agriculture can do for its own benefit are: 1st. The collection and distribution of information which will prevent an over production of any particular crop, e.g., hogs and wheat at the present time. 2nd. Diversification so as to have production meet local demands, e.g., Indiana annually imports large quantities of potatoes which should be grown in Indiana, as the Indiana price is considerably higher due to freight and handling charges necessary to importation. Our own county buys several car loads of potatoes annually. For the past three years we have been pushing potato production, until at the present time our potato crop slightly exceeds our demand. Another example from our own county — we never produce sufficient legume hay to properly feed our dairy cattle. We are pushing wheat acreage down and soybean acreage up until at the present time we believe we have sufficient soybean acreage to properly feed our dairy cattle. These two changes in Harrison County have meant a change of several thousand acres, and will provide for home production and consumption of large volumes which have been going through the markets at a loss to the farmer, as he has been selling wheat and buying hay and potatoes. 3rd. A system of orderly marketing, which will prevent dumping by feeding the supply to the markets as the demand is shown, and will provide for the pooling of orders for supplies for farmers so that they may be purchased under favorable market conditions and delivered to the farmer as he demands them.—*N. I. Clunie, Corydon, Indiana.*

Greater creative industry for the middle west. Greater economy in farm production. Greater economy in marketing. Cutting down "lost motion" everywhere. — *Sam M. Jordan, Lecturer, Board of Agriculture, Columbia, Mo.*

Reduce the number of farmers. Let the remaining farmers cultivate less acres but more intensely. Then their return per man and per acre will be greater. This would make prices higher. A greater income and less expense for what the farmer has to have on the farm. —*J. A. Salmons, Farmer Jonesboro, Ark.*

First, Better livestock, such as improving dairy cattle, quicker growing swine, etc. Second, Pure seed, increasing production by certified seed. Third, 20th Centruy farm management, complete reconstruction of farm program of work on an up-to-date business basis. Fourth, Elimination of all slack between consumer and producers, cooperative marketing and other agencies. Fifth, Full use of all agricultural institutions and their information.—*W. S. Hill, real estate, formerly County Agent, Fort Collins, Colo.*

Pure bred horses, hogs and cattle. Pure bred seeds of all kinds and selection of varieties best suited to location. Terracing all land subject to erosion and the building up of the fertility of soil by raising legumes. Specialize of crop you like best but don't confine your crop to one or two items. Do variety farming.—*G. W. Thompson, farmer and stockman, Batesville, Arkansas.*

More economical production and marketing. A yearly program of work for the farmer instead of seven months. More diversified farming. Improving soil fertility by rotating crops and adding fertilizer.—*L. C. McIntosh, Co. Ag. Agt., Fowler, Indiana.*

By Ted Butlar

BETTER CROPS' Washington Correspondent

Congress has given little or no attention to possible agricultural legislation thus far during the short winter session. Several leaders early indicated that Congress would take no action on farm measures until the Agricultural Conference appointed by President Coolidge had made its preliminary report and recommendations. Under the chairmanship of Robert D. Carey of Wyoming, the Conference reconvened in Washington on January 5, and immediately announced that a recommendation looking to relief of the cattle industry could be expected. It was further stated that the Conference would have something to say on cooperative marketing and other matters for the consideration of Congress before it adjourned on March 4.

Agricultural Washington has been quite disturbed over the outbreak of a serious poultry disease in New York which resulted in an embargo being placed on all shipments from the Middle West. No sooner had these reports been received and confirmed in Washington than Congress passed an emergency measure appropriating $100,000 to combat the situation. Dr. J. R. Mohler, chief of the Federal Bureau of Animal Industry, the man who so successfully led the forces against the late outbreak of foot-and-mouth disease in California and Texas, immediately got his machine in running order and laid down plans which today have the appearance of putting the poultry industry in a normal condition without delay.

A piece of work carried on by the Federal government which rarely gets before the public has to do with the animal hunters employed by the Biological Survey. In a recent report covering the past four years it is stated that a total of 2,542 wolves, 695 mountain lions, 11,625 bobcats and lynxes, 497 bears, and about 380,000 coyotes have been destroyed in the campaigns to eradicate predatory animals. This represents a direct gross saving to livestock raisers of not less than $23,000,000, say government officials. Who said that these United States had passed the stage where the wild frontier was no longer in existence? Wild animals continue to be a serious economic factor in many western states.

A recent survey by the U. S. Department of Agriculture shows that 70 per cent of all cooperative cheese factories in this country are in the state of Wisconsin. Furthermore, 60 per cent of farmers belonging to such enterprises and 70 per cent of the business handled in 1923 are credited to this state. Wisconsin is far in the lead in cooperative cheese making and rightfully should be for it is looked upon as the leading dairy state. The oldest living organization from which the government received reports is the Cayadutta Cheese Factory at Fonda, New York, established in 1863, when cheese was selling for about 13 cents a pound.

Speaking of cooperative marketing, Chris L. Christensen, who recently was selected to head up this work in the U. S. D. A., has just returned to Washington from a three months' trip over the country and again hits some of the high points dealing with success or failure of such enterprises. "The success of cooperative marketing depends more than anything else upon efficient management and a thorough understanding on the part of the membership as to the possibilities and limitations of cooperative marketing," says Christensen in succinctly summarizing up his investigation. He declares that cooperative organizations are beginning to realize more than ever before that production and marketing are inseparable, and that very often the solution of a marketing problem may be found to originate in production practices.

Some idea of the difficulty encountered by the 1924 corn crop and resulting higher prices, can be seen in official statements that less than half of the crop in the corn belt states reached maturity before the first killing frost. Usually about 91 per cent of the crop reaches maturity at this time compared with 48 per cent the past season. Only 23 per cent of the crop was reported as fit for seed, but this is more than enough for that purpose. This condition was laid to a wet spring and summer rather than to frosts.

As can well be expected consumers generally know less about differences in cuts and quality of meat than of any other commodity. This old belief again has been brought forward and proved by officials of the government who have completed a nation-wide survey of the retail meat business. Most of the housewives interviewed were able to mention only two or three steaks which they could recognize if cut, and the average number of roasts which they could name was less than two.

The meat survey was highly illuminating. Of the average consumer dollar received by the retailer it was found that the meat costs 78.6 cents, the retailer's expenses were 19.7 cents and the profit but 1.7 cents. More than 60 per cent of the people surveyed bought their meat from shops which were within a radius of less than three blocks from their homes. Only 25 per cent were in the habit of going five blocks from their homes.

Breeding Plants to Resist Attacks

(*From page 14*)

drought and subsequent spider attack. It has been a splendid summer for the spider. The trees in the orchard dropped out of the race one after another. But—the unforeseen happened. The spider resistant trees failed to shed their leaves although they were under the most trying conditions. Splendid crops have also been produced despite the fact that a late frost destroyed the blossoms on nearly all other trees in the block. What does all this signify? Three years' observations seem to show conclusively that these trees are highly resistant to red-spider attack. They have received treatment similar to that given all other trees and as yet have not faltered.

This leads one to the belief that through breeding channels trees have been developed which are highly immune against a very severe orchard pest. It seems to follow that what was thought impossible is really possible. It opens up a new field of endeavor. Can we develop trees and other plants which are immune against pest and fungous attack? This question, the writer thinks, can be answered in the affirmative as the above experiment seemed to show.

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To assist county agents, agricultural teachers, extension workers and other industrial agencies, we are glad to send a copy of any of the following booklets that might be helpful in your work:

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These booklets were written by experts and contain valuable information on the proper and profitable use of fertilizers. Upon receipt of your request, we will mail you a copy of each booklet requested. If, after looking them over, you want more for distribution among the people you are working with, we shall endeavor to send them as long as our supply lasts.

We have still a few maps showing the location of the county agents in the United States. A copy of this will be sent free postpaid, upon request.

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How About the Consumer?

(*From page 7*)

they continue to exist indicates a demand for them.

But, whereas, Governmental agencies have not the power to say what shall be the precise method of distributing food and how many people, and who, shall be engaged in the business, the producers themselves can exert a great influence in seeing that their products are handled in the best manner to conserve the interest of themselves and of consumers. It is obviously to the advantage of growers to make it possible for their products to be placed in the hands of the consumers at the lowest possible cost.

A case in point where this policy is followed is that of the cranberry growers. These growers early learned the importance of price in affecting the consumption of their product. They found by experience that their best interest requires the trade of the great bulk of the consuming public, which is made up of laborers and farmers, and that a retail price above 25 cents a pound cuts off this class of consumption.

The 1921 cranberry crop, for example, was short and the demand for berries good. If the association had distributed its supply during the normal selling period, the demand for berries would have caused the price to advance early in the season to a level that would have cut off a large class of people whose trade is valuable during a season of normal production. To avoid this, the association kept pushing its berries on the market in order to satisfy the demand, at rates that would permit a retail price of 25 cents or less.

"Here is a concrete instance," declares Asher Hobson, who is now the American representative to the International Institute of Agriculture at Rome, and who made the cranberry marketing study, "of a cooperative association throwing its supply upon the market to discourage unduly high prices. This action was in keeping with the best interests of the association as demonstrated by past experience. It was in line with a long-time sales policy designed to retain the volume of custom necessary to the disposal of a normal crop."

Mr. Hobson's study showed that in 1920 with a crop slightly below normal and in the face of rapidly falling prices on practically all other commodities, the cranberry market advanced throughout the selling season. The grower received 54 cents of the consumer's dollar for growing and packing the fruit, the association got 3¼ cents, advertising cost 1½ cents, transportation 7.4 cents, jobbers and other wholesalers 11.2 cents, and the retailer 22.4 cents.

A few of the outstanding accomplishments of the cranberry growers are summed up by Mr. Hobson as follows:

1. A reputation for quality has been built up by establishing and maintaining uniform grades and packs.

2. Marketing risks have been distributed equally among all members of the association by means of pooling systems. High and low-priced orders, losses and gains through market fluctuations, and the risks of transportation, are equally divided. Pools are, in effect, a form of market insurance.

3. An advertising fund sufficient to bring the berries forcefully to the attention of the consuming public has been created by means of a small assessment per barrel. Through advertising, consumption has been increased to an extent sufficient to care for increased production. Advertising has played an important part in the achievements of the cranberry growers.

4. "Glutted" and "famine" markets have been eliminated by coordinating distribution from the three producing districts, and as a result market prices have been stabilized. Cranberry prices did not rise during the war in proportion to other prices. On the other hand, cranberry prices did not fall during the selling season of 1920-21, when prices of practically all farm products, as well as other commodities, declined rapidly. This stabilization of the market, together with the establishment of uniform methods of dealing with the wholesale and retail trade, has built up a good-will relationship with the trade to a degree which could not have been reached by the growers individually.

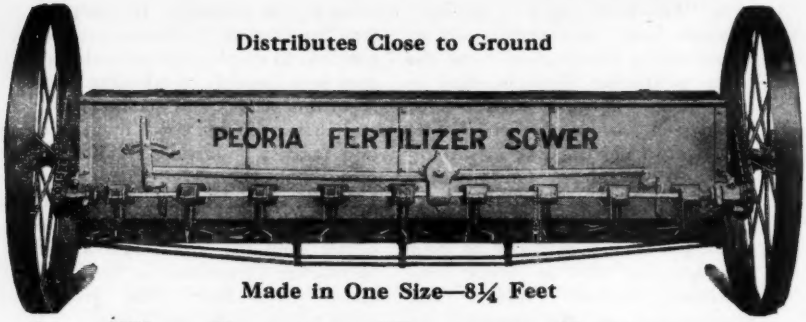
5. The goal of cooperative marketing of perishable food products is to obtain the highest average price which will move the entire supply year after year. To this end, the adjustment of demand forces to the supply of any given year requires a close study of ever-changing conditions affecting the price of the product. By cooperation the cranberry growers are in a position to employ specialized business men capable of advising them regarding supply and demand forces and their probable effect upon price and market conditions. Thus the growers put themselves in a position to gauge the factors which influence the sale of their product and are better prepared to take advantage of market conditions as they find them. Individually the growers were unable to do this.

6. The wide fluctuation in yields from year to year shows that the exchange has little or no control over the volume produced. Hence, its energies are necessarily turned toward economies in marketing and stimulation of consumption. These are matters over which the growers, acting as individuals, can have but little control.

7. The cost of marketing cranberries has been reduced until it is believed to be one of the lowest, if not the lowest, among the fruits. In 1920 the grower received 54 per cent of the consumer's dollar.

Early morning in the Washington Produce Market.

Distributes Close to Ground



Made in One Size—8¼ Feet

The Greater Harvest Getter

FERTILIZER SOWER

WILL successfully distribute Lime and Fertilizers in any quantity desired from 100 to 6,000 lbs. under all circumstances, damp or dry. No Clogging; Light Draft; for two ordinary horses. Other machines of equal capacity are heavy draft for four horses.

The use of fertilizer has become a necessity to modern agriculture. Farmers of the Eastern States have realized for years the profit to be made from the use of fertilizers, and now the Western farmer is rapidly learning to look upon fertilizer as an "investment" rather than an "expense."

The American farmer is learning that by taking everything from his soil and returning nothing, he is headed straight for agricultural bankruptcy, and that every dollar spent on good fertilization is better invested than a dollar in the savings bank.

But fertilizer, to be most efficient, must be mixed with brains. It must be properly applied.

For many fields and many crops, a broadcast distributor offers the best solution of the problem of how to make the application.

There is no distributor on the market that can equal the New Peoria. It took years of actual experimenting in the field to finally produce this high-grade distributor. It bears little resemblance to the makeshift box-wheels-and-axle contrivances commonly found on the market.

We also manufacture Fertilizer Drills in all sizes.

For Catalog and Prices Address

Peoria Drill and Feeder Co.

Peoria, Illinois, U. S. A.

Shall We Dust the Apple Orchard?

(*From page 12*)

encountered in this series of investigations was apple scab, other tests of dusting materials indicate their inferiority in the control of apple blotch. Other serious diseases such as bitter rot apparently do not respond to dusting as a control measure.

While dusting cannot be substituted for liquid sparying, it may serve a very important purpose in an emergency due to the rapid manner in which it may be applied. Dusting may also prove a time saver during the later summer applications made principally for the control of codling moths. In large orchards, a duster may come to be considered a necessity to meet emergencies caused by break downs of spray machinery or unfavorable weather conditions during the spraying season.

As these investigations were conducted during the period of inflated prices the comparative cost figures are of little value for present conditions. Certain relations between comparative costs do exist, however, and these are interesting as such.

The greatest item of expense with dusting was the cost of materials. About 95% of the total cost was for material and 5% for labor. With spraying 70% to 75% was the cost of materials and 25% to 30% was the labor cost. Due to this relation the cost of dusting increased very rapidly with the amount of materials used.

During the season of 1922, when prices were very near their present level, it cost 9 cents per tree per application for spraying and 14 cents for dusting. In previous years the relative cost of dusting had been much greater, due to the higher costs of dusting materials. Everything considered, dusting proved to be more expensive than spraying. In these tests for the above year, 5.2 gallons of spray were used per tree, per application,

Typical apples from the check plot. Note the serious scab and insect injury.

and 2.4 pounds of dust. This is considered to be about the minimum amount of materials for trees of this size.

Although the dusting of apples does not as yet appear to be a satisfactory method of protection against insect and disease enemies, the future of dusting is an open book. It is impossible to predict what the ultimate results will be. New dusts are being placed upon the market and the older materials are being improved. Some of the newer dusts are again returning to copper or mixtures of copper and lime in a very finely divided form which may possibly prove to be a more satisfactory fungicide than sulfur dust. The perfection of a more successful nicotine dust for use against aphids has also broadened their field of usefulness another step. The fruit growers are watching this development with a great deal of interest, and some are already venturing into the field in an experimental way. It is mainly by these trials and their results that the ultimate success or failure of dusting will be determined.

NOTE:—*Purdue Agricultural Experiment Station, Bulletin No. 283, gives the complete results of these investigations.*

The Cedar Tree and the Apple

(*From page 20*)

There is only one precaution in using this poison. It has a salty taste and animals are quite liable to lick it. A few licks, and they are done for, so be careful when using it in pastures.

Is all this worry about cedar trees "much ado about nothing?" Far from it, since many orchardists know from sad experience that cedars harbor a necessary half of the apple rust disease. It is a common sight in the Spring to see cedar trees literally brown with slimy, stringy clumps, hanging from the young twigs. These slimy fingers protruding from the cedar apples are of a most peculiar nature. They consist solely in the gelatinous stalks of spores which cover the surface of the fingers. Technically they are known as telial horns.

The palisade of spores covering these horns in turn produce a multitude of other tinier spores or sporidia, which are shot into the air. The winds carry these sporidia for a long distance and woe betide the apple tree that happens to be in their path. Not long ago, in July, a farmer took me to his home to see an apple in his yard. He claimed that he had never been able to get good fruit from it. At that time the leaves on one side were yellow and were rapidly falling from the tree. Each yellow leaf was a mass of small, orange-yellow spots, whose lower surface looked like a porcupine's back. Each of these spots was a rust postule and the spines were only the clusters of tiny, yellow tubes which contain another kind of spore. A tree without leaves is worthless, when it comes to producing apples. Moreover, the fruit that is produced will be distorted and spotted with the rust postules.

SOMEHOW, during the ages of evolution, this rust on apples has developed the habit of attacking cedar trees, and now the apple rust is helpless without the cedar. And so these spores on the apple must be blown to some neighboring cedar tree, where they will produce "cedar apples." We have but to take advantage of this little eccentricity to control apple rust. Destroy the cedar and apple rust disappears. So Simpson knew what he was about when he purchased the cedar trees that he might destroy them.

In the Old Days

(*From page 23*)

a leader, and the people believed in him. He was the ideal. He did what he saw to do and did it well. During the big snow of 1914 and 1915, he went out on snow shoes, and carried food and clothing to the suffering dry farmers. Arriving at a farm at the sad time of a death, he took charge. He provided flowers from his own pocket, he read and gave the funeral service. "Bill" Lauck was a Bible reader, he was and is a Bible student; he was, I say, an ideal County Agent. He gave service and he received thanks.

Another man whom I shall always have the kindest of thoughts toward is A. C. Cooley, the ex-Director of New Mexico. One evening he told me something I have never forgotten. It happened that at that moment I was being considered for a job in New Mexico. Director Cooley said to me: "Now if you come to New Mexico, I want you to remember that your politics and your religion are Agriculture." How many of the present day County Agents ever have any better advice given them? It was good then, and it was true then, and it is the same today. That bit of advice followed will keep a County Agent out of a heap of trouble.

When I stumbled off the train at Worland, Wyoming, all by my lonesome, I had to get from behind the box car to see the town. I made my way to the hotel, the Dorman House, run by "Lucky" Dorman, whom I afterward learned to know quite well. The first meeting I attended as a County Agent was at the little old school house at Coulter, a siding south of Worland. A newly-found friend, Dr. Green, took me out in his car, for as yet I did not own one. After a few days spent at Worland, I went on to Basin, where my headquarters were to be. The first man I met after getting settled at the old Markham House, was Lou Blaksley, the then County Clerk of Big Horn County. A finer man no person ever met, and a better, dearer friend no man ever made. Gradually I began to meet more and more people. The bleak, dreary bad lands had a great fascination for me. Being born and bred in Colorado I loved the West. As long as I live, never will the memories of those long, lonely drives forsake me; in the heat of summer, clouds of red, brown, white and grey dust, hanging in ever descending and moving billows; in the beautiful cool of the northern fall. In springtime, when every wet spot was a boghole, and every boghole a death trap to "Old Henry," my 1914 Ford. In winter with the snow lying in bleak drifts, and the cold winds, howling and moaning around the ghostlike buttes. The roads in those days were what Sherman said war was. If I could only recall the roads, the memory would be a nightmare. I have been stuck for hours, in sand, mud and just stuck. I have walked for miles to get a horse or a team of them to pull me out.

I well remember one afternoon when I started to reach a certain man's ranch. He had told me how to get there and I was doing my best to follow his directions. At last I found myself down near the Big Horn river, miles from nowhere. Driving a car was just as new to me then as was County Agent work. I had a lot to learn. I came to a steep hill and Old Henry failed to make it and I had to back down. I saw a nice level place to one side and, thinking I would get a better start from it, I turned onto it. Lo and behold, it was the most bottomless pit of sand. The wheels whizzed around, and settled

down. At last, I didn't know what to do. I took it all apart and put it together again, and yet it wouldn't pull out. Completely played out, I felt like touching a match to it, for, of all hopeless things in the world, a stuck Ford is the champion. At last I started out for help. I didn't have any idea how far I had to go, but off down the road I went. At last, after quite a walk, I spied some old ranch buildings. Coming to them, I immediatly saw they were deserted. Hope fell. However just to hear my own voice, I yelled out, "Hello," as I passed the barn. As from a grave, came back a voice, "Hello!" Was it an echo? Was it a really truly ghost? For the moment I didn't know but presently, as a young man appeared, I knew it was neither. I told him of my trouble, and he, being of the kind that lived in that county, dragged out an old mare with a piece of a harness on. Back to the car we went and after a lot of pulling, and cussing, and pushing, we got it into the road again. He almost refused the only dollar I had with me. And this was only one occasion that I was stuck.

One winter we held a week's short course at Lovell, Wyoming. The weather was bitter cold and it kept someone busy poking coal into the stove, to keep all from freezing. Never will I forget the crowds that came to those meetings. Mr. A. E. Chamberlain, then of the *Dakota Farmer*, was with me, helping me out. He could do anything, and would do anything to help. We had stock judging scheduled for 1 A. M. It was so cold I was somewhat fearful for Mr. Chamberlain, he being a man then of no tender years. However, he was a true blue sport and, after purchasing some overshoes, we sallied forth and the stock judging was put on. Many such meetings were held. At one place, Shell, we held the meetings in a corral. Speaking of Shell recalls my first visit to that district. A big spring rain had made the roads impassable to cars. The mail was being hauled by wagon and team. I had planned on going to Shell for sometime and, when that time came, the mud also came. However, I took my saddle which I had with me, and loading myself into the mail stage spent a day getting to Shell. Next morning I rustled around and got me a saddle horse. Off up Trapper Creek I went.

I came to one place where a number of men were working a bunch of cattle. They were branding some calves and the work was all old stuff to me. I rode up and, knowing the custom of the West, kept my mouth shut and looked on. Gradually a conversation opened up and after a while I crawled over the fence and jumped in and helped them in their work. They didn't ask me who I was and I didn't tell them. Having spent some time there I rode off up the creek, leaving them guessing. So I visited several ranches during the few days I spent in the district, and when I at last left very few had found out who I was or what I wanted. However, each and every one knew that I knew the game they played, and I had really made a number of acquaintances, who later became very good friends. It was quite a while before those men found out who I was, I had slipped up on their blind side, as "Old Bill" Lauck used to say.

IN those days we used to go out and do everything and anything. Gracious, I have done almost everything, it seems, when I think back over the days. We used to go out and help vaccinate calves by the hundreds. In fact, some of the boys did it by the thousands. There being no "Horse Doctor" in my county for quite awhile I acted in that capacity, and my several year's study of Veterinary Medicine stood me in good stead. Some of

the stories that could be told would seem queer, to say the least, now a days. We dehorned cattle, ringed dairy bulls, and helped build silos. I *mean* build too. Mix concrete, put up forms, pour concrete and all. There wasn't any standing back yelling orders in those days. There wasn't any community chairman to blame. You were it, and we got the job done too, is what I mean.

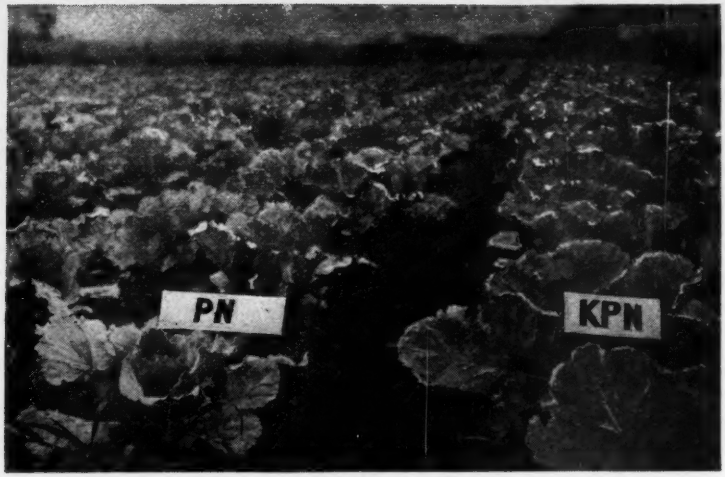
We put on coyote killing campaigns in the sheep country. We put on grasshopper campaigns in the farming country. We helped hunt up lost stock and published, in my county at least, a little sheet we called *The Farmers' Exchange*, and many thousands of dollars worth of stuff changed hands through that medium. We shipped in dairy cattle, and to the memory of Eph Burton, who at that time was Dairy Extension Specialist, Wyoming owes a great debt. His work will live, and it is to be greatly regretted that such a mind could not have had a stronger body to have carried it through the paths of life.

And shall the work of Ivan Hobson stand. The club work, founded by him, was most successful. As his reward, he was called to Washington, D. C., to help direct such work, nationally. And our county fair, and its secretary Colonel W. H. May. It was a real fair too, and when Colonel May and yours truly took it in hand it was a big juicy lemon. As I look back over the work of the past, I cannot help but feel that the present day methods are not entirely right. We certainly got results then, where we do not get them now. We knew the people then, where we do not know them now. Organizations are good, and in some states, no doubt, solve the problem, yet out here in the west a County Agent must still work with his people if he is to get very far.

Such work as we used to do, as "Bill" Lauck used to do, takes the very life out of a fellow. It was work, real work, and no man could stand it many years. Early and late, night and day.

I RECALL holding a series of two weeks poultry meetings. All alone, using a lantern, and stopping at ranches for the nights. Each place they would sit up until nearly morning. Next day it was drive to the next stop, and make a bunch of visits on the way. The last night will long linger. The school house was on the border of Wyoming and Montana. Possibly two dozen people came. After the pictures and the lecture, came the dance. My goodness, I played the organ, danced and howled until nearly morning, and when I pried open one eye next morning, to take a look at the sun, I felt as though I was an even hundred years old.

But those days are gone. And the work has progressed to a point now where we don't have to explain to every single person we meet just what a County Agent is and what he is for. Some very funny things happened then. Some very sad things happened and some very serious things took place. From a physical standpoint, the work is not as hard now as then. However, I can't even imagine what kind of a physical giant I might have been had I not put in so many 24 hour days in the days gone by. Progress and time go hand in hand. When we old timers are trying to warm a marble slab, the then County Agents will be doing things, and doing those things in ways that we never thought of, or possibly thought impossible. County Agent work is a work that now has a past, as well as a future, and I am really glad to have worked in the pioneer days when the foundations upon which the work rests were laid.



What Profit do you make on CABBAGES?

FIGURE it up. Put a fair money value on your labor; your risk; your land and the general wear and tear of your equipment—then see if you are making all you should be making on your cabbage crops. The chances are, you should be making more—

Irrespective of location—whether in the East, West, North or South—the success of your crop is measured to a large extent by the fertility of the soil. If nitrogen, phosphoric acid and potash are not available in the needed quantities, your profits are bound to suffer. Improve your soil—

One fertilizer mixture might bring big results while another will not, even though their costs are nearly the same. On a clay loam soil in New York State, Mr. J. M. Doran of Rush County, used a mixture of 2% nitrogen, 8% phosphoric acid and 8% potash and made a net gain of $50.10 per acre *over* the acre which he fertilized with a 2-8-0 mixture. This experiment proved to Mr. Doran that his soil was hungry for potash, and when potash was applied, the profits jumped.

Try a fertilizer containing plenty of potash on *your* cabbage crop this coming season. Remember, cabbages are heavy potash feeders. Potash aids in strengthening the plants and makes them more resistant to the attacks of insects and disease. And besides, a complete mixture containing potash costs only a little more than the incomplete mixtures.

Genuine German Potash Pays

Potash Importing Corporation of America

General Office:

81 FULTON STREET, NEW YORK

Citizens' National Bank Bldg.
Baltimore

564 Market Street
San Francisco

Making Cabbage Pay

(*From page 10*)

and comparing results with those secured on a similar plat of ground which is not fertilized.

"I wanted first hand information and this I obtained by fertilizing a portion of my crop, leaving an equal portion unfertilized and at harvest checked the yield upon the scales. There is no guess work about such a proposition; the actual results on your own farm tell the whole story, and tell it in such a way that you know you have the truth."

The results obtained by Mr. Burkhardt appear the more remarkable, when it is remembered that Meadowlands, Minnesota, is north of the 47° latitude, in other words, north of Duluth. The growing season is extremely short, and scarcely a month passes without frosts. The soil on Mr. Burkhardt's farm is a type of muck soil, known as Muskeg. It is mostly organic matter, being composed of rotted and partially rotted vegetation. This extends to a depth of two or three feet, when we strike a subsoil of heavy sticky clay. It is sometimes difficult to secure good drainage on this type of soil. It has the appearance of being very fertile and productive, which however is hardly true as shown in the following table.

Mr. Burkhardt divided a portion of his field up into 4 quarter acre plats. Leaving one plat as a check, he applied a complete fertilizer to second plat at the rate of 1,000 lbs. of a 2-7-10. In other words, a ton of this mixture would contain 40 lbs. of actual available Nitrogen, 140 lbs. of available Phosphoric Acid and 200 lbs. of available Potash. To another plat he applied a like mixture, with the exception that it contained no Potash. On plat 4, Potash only was applied at the rate of 200 lbs. per acre. The results are shown graphically in the table below.

SHIOCTON is credited with being the largest shipping station of Holland and Danish cabbage in the state of Wisconsin. Many large warehouses are situated there, and many thousands of tons are stored annually. The surrounding country is low and the soil is mostly what is known as muck, and in many respects it is ideal for the growing of cabbage. Mr. G. H. L., one of the leading buyers at Shiocton, has for years urged the farmers to use

Table Showing Results Obtained by Mr. Thos. Burkhardt

	Yield of Cabbage per acre in lbs.	Increase due to Fertilizer in lbs.	Increase due to Potash in lbs.
No Fertilizer.....	12,000 (8,000 lbs. marketable) (4,000 lbs. culls)	....	....
1,000 lbs.—2-7-0..... (No Potash)	23,340 (All marketable) (No culls)	12,340	....
1,000 lbs.—2-7-10.....	40,200 (All marketable) (No culls)	28,200	15,860
200 lbs. Sulfate of Potash	24,360 (All marketable) (No culls)	12,360	12,360

Potash in some form to increase their yields. Mr. L., having made a study of the matter, knew that the soil surrounding Shiocton contained a very small quantity of Potash. Muck soils are notoriously lacking in this element and those around Shiocton were no exception. He also knew that of all the crops grown upon the farm, few are more heavy Potash feeders than cabbage. Therefore Mr. L.'s advice was sound and timely but, as usual, the farmers were reluctant to try anything new. They were getting a fair yield of 6 to 10 tons per acre and could not be expected to try new methods except in the face of actual failure.

Therefore, when the opportunity presented itself, Mr. L. was very glad to have his friend, Professor Maas of the Public School, carry on an actual demonstration to illustrate the benefits derived from the intelligent use of commercial fertilizers. Professor Maas had found it profitable to plant a few acres to cabbage in connection with his school work and was, therefore, admirably situated to carry such a demonstration.

He divided a portion of his field into 4 quarter acre plats. Leaving two as checks, he applied a complete fertilizer to one and to the other only Nitrogen and Phosphoric Acid. The result is shown in the following table.

WHAT conclusions are to be drawn from these tests? What is the lesson for the average gardener or truck grower?

It is simply this: Study your crop and study your soil. Determine the needs of your crop. Estimate the possible resources of your soil. If there is a discrepancy —and there is quite sure to be one —it is the business of the grower to make up deficiencies of his soil by applications of manure and fertilizers.

We have not yet touched upon the most important consideration in these calculations—the gain in dollars and cents from the intelligent use of Potash.

At Meadowlands the expenditure of $14.40 for a complete fertilizer containing 10% Potash produced an increase of 16 tons of marketable cabbage per acre. Figuring cabbage at a low rate of $10.00 per ton, we have from this investment a profit of $145.60. 200 lbs. Sulfate of Potash costing $5.60 yields an increase of 8 tons per acre. At the same rate the profit from this investment is $74.40. The test shows, however, in this case that the soil is deficient in all the elements of fertility and it is, therefore, most profitable to supply a complete fertilizer. Some idea of the effect of the fertilizer applied by Mr. Maas may be

	Yield, Per Acre in Tons	Value at $15 Per Ton	Increase Over Unfertilized in Tons	Value at $15 Per Ton
No Fertilizer.....	7	105.00	..	....
1,000 lbs.—4–8–10.....	12	180.00	6	90.00
1,000 lbs.—4–8–0.....	9.6	144.00	3.6	54.00
No Fertilizer.....	5	75.00	..	....
Average O Plats.....	6	90.00	..	....

obtained by examination of the pictures on page 10. The yield was not only practically doubled, but the size and quality of the heads were much improved. In this instance there was also a noticeable absence of blight in the plat receiving the Potash. The other portions of the field were badly blighted, the ground being about covered with the yellow leaves which had dropped off. From a financial standpoint Prof. Maas' experiment was even more successful.

The important point about these tests is the fact that while an application of Nitrogen and Phosphoric Acid increased the yield by 3.6 tons, while the addition of Potash to the mixture raised this increase to 6 tons. In other words, the use of $5.60 worth of Potash increases the value of the crop $24.00.

As shown at the beginning of this paper, the cabbage crop normally removes a large amount of Potash from the soil. The crop requires it for its proper development and maximum yields cannot be produced without it.

THIS is the lesson taught in the experiments described above and these facts should not be lost and will not be lost on the wide awake grower.

There are crops which require excessive amounts of Nitrogen to obtain best results, others that require large amounts of Phosphoric Acid. The above experiments plainly indicate that while cabbage requires relatively large quantities of Nitrogen and Phosphoric Acid, Potash is the controlling element, and the most important consideration in fertilizing, this crop. The best yield of cabbage cannot be grown without abundant supply of Potash.

The experiments cited here show that Potash not only helps to produce the largest crops of cabbages, but from a financial point of view applications of Potash yield the greatest profit.

This is a crop meter used by a reporter for the U. S. Crop Reporting Board. It consists of 12 separate meters, one for each crop, and is operated by the speedometer. At the end of a run, each meter shows the total number of feet of each crop passed.

Learn the truth about Fertilizer

Commercial fertilizer is not magic. It is no substitute for work, or for farming brains. It will not make a successful farmer out of a shiftless, ignorant failure. Fertilizer varies in quality like corn or tobacco or cotton, and some brands are worth more than others. Good fertilizers, like Royster's reliable old mixtures, are a godsend to good farmers who learn how to best use them to make money

Nearly forty years experience enters into the making of the Royster mixtures, and hundreds of thousands of the country's best farmers pin their faith to this famous old brand.

For advice about the use of fertilizer, write to Farm Service Department.

F. S. ROYSTER GUANO CO.

Norfolk, Va Richmond, Va. Charlotte, N. C.
Columbia, S. C. Atlanta, Ga. Montgomery, Ala.
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ROYSTER

Field Tested Fertilizers

Making the Farm Pay

(*From page 21*)

plowing under of green crops, such as clover, soy beans and vetch. I endeavor on my farm to plow under in my crop rotation a heavy clover sod which materially improves the physical and mechanical condition of my land.

VEGETABLE matter or humus element of the soil is of inestimable importance in crop production because of its influence upon the mineral plant food ingredient defused throughout the soil. It has been my experience and observation that most of the soil throughout the Middle West is deficient in mineral plant food elements. I know from a thorough study of my own soil problems that despite the fact that I return a large quantity of stable manure back to the land, follow a four year crop rotation, my soil is deficient in mineral elements. For more than fifteen years I have been using quick-acting fertilizer on my soil and I know that I am annually increasing my crop production. I use a fertilizer containing a liberal percent of acid phosphate and potash. For the past three years I have been gradually increasing the potash element in the fertilizer and I believe I am getting very profitable results. The mineral plant food elements are the most difficult to restore to the soil as both green and stable manures are deficient in these elements. There is practically but one economic means of restoring mineral elements to the soil and that is through buying high analysis quick acting fertilizers in which the potash content has been brought up to a more adequate degree than in former years.

To make the farm pay, the farmer himself must make a thorough study of his soil. While other factors, such as marketing of farm crops and cooperative buying and selling will materially assist in making the farm pay, the problem of soil production is fundamentally the first to demand consideration. Observation teaches that when soil production declines to a low level the profit earning capacity of the farm is impaired and sooner or later the owner moves to town or sells his holding. I am a thorough believer in livestock methods of maintaining soil fertility, as I believe that livestock husbandry affords the most practical and economic means of maintaining soil production. With abundance of humus or vegetable matter in the soil the livestock farmer is sure of profitable returns from money invested in quick-acting fertilizer.

Jeffisms

Sometimes it looks to me as if a tax was a penalty imposed on a man who makes money and is honest enough to admit it. The more he makes and the more honest he is about admitting it the more he gets penalized.

There are three rocks on which many a friendship has been wrecked. If you want to avoid giving offense, you must steer clear of discussions on religion, sex or politics.

Letting people get your goat is really paying them a big compliment. Indefference is the most powerful weapon to use against your enemies.

(*turn to page 48*)

How I Use Demonstration Teams

(*From page 5*)

simple terms and presented in an accurate, simple way. When speaking naturally, there is no trace of "High Brow" in the work of the boys and girls. Abstractions are forgotten and theories give way to proven fact.

OUR pig club boys had developed a demonstration on Hog Sanitation. It was at Mr. Burch's suggestion that these boys attended our hog feeding and hog sanitation demonstration meetings and gave their demonstration. It was very evident that their work had an appeal not found in the work of adult speakers. The points were made vividly and concisely. Their youth and enthusiasm inspired enthusiasm in the hearers. The fact that boys could do all that was necessary for success sounded better and more practical than the statement that the United States Government had been able to do certain things.

After this I found it very easy to arrange for the boys to appear before large gatherings where it would have been difficult to arrange for an extension worker to speak. The boys' work had a lightening effect upon the programs of picnics and other large gatherings instead of a heavy effect produced by a scientific presentation by an adult which would have to be balanced up on a program. Several gatherings used demonstration teams to add pep to the programs and at the same time I noticed that the lesson was driven home.

THE potato boys in addition to their work before farmer gatherings did us a very fine service by appearing before the Richmond Rotary Club and giving their demonstration. I must confess, from the way that the Farm Bureau started out in our county, that it has been very hard to quell suspicions of the business men that the Extension work is not, unlike some preceding organizations, working at cross purposes with legitimate business operations. The boys' work was most enthusiastically received by the business men. They were sold on club work and extension work by the boys and, should occasion arise, I am sure that we could count on their support.

This team also did a very valuable piece of work in connection with the schools. I was invited to speak before our county teachers' meeting on Club work and preceded my remarks by a demonstration by the boys. The enthusiasm was spontaneous and I find that the school organization is now very friendly toward the extension work and willing to help wherever possible.

A more general development of demonstration teams is bringing the communities of the courty closer together and building up a spirit of rivalry to excel in extension work.

A greater use of demonstration teams in extension work means simpler and more easily understood demonstrations, the reaching of more people with worthwhile practices and more genuine and spontaneous enthusiasm for extension programs.

In the next issue of BETTER CROPS *our old friend, Albert Hansen, will have one of his interesting articles as person plants. It is entitled "SOMETHING TO BE ON YOUR GUARD AGAINST."*

Is Honesty Possible?

(*From page 4*)

bragged about, that deer you shot. Come now, just how big were they really? And the things you did and saw during the war! Did they happen just as you describe them? Well, we won't blame you too severely. It may be dishonest, but it hurts no one and generally deceives no one. It is akin to the inspiration of the artist. Only beware that you don't carry this kind of imagination into the practical affairs of life. It won't do to imagine you are a millionaire unless you have the mazuma to back it up. Use your imagination all you like, but don't mistake it for fact.

WHAT, then, is honesty? Philosophers and sages have debated the question for centuries without ever coming to a final satisfactory definition. Honesty is hard to define but not difficult to detect.

Whenever I have occasion to suspect a man's honesty, I ask myself "What would be the result if he said exactly the reverse?" If such a course would cost him his job, his money or his prestige, then I have the right to doubt his disinterestedness and his honesty.

Honesty is *really* honesty when you are most strongly tempted to be dishonest. To say "The sun will rise tomorrow" is perhaps honest, but no one would deem you an honest man on the basis of such simple statements of facts. When you can stand up bravely and say "Yes, I made that mistake. Mine is the responsibility," and take the consequences, then you have shaken hands with honesty.

Courage to banish fear; consideration to conquer selfishness, and humility to subdue pride. For each motive of dishonesty there

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is a counteracting quality which we can develop.

"HONESTY is the best policy." That is one of the maxims we wrote in our copy books when I went to school. I used to think it meant that honesty paid the best in material goods. Often enough it does, to be sure. But if we thought of it only from that angle, there are many times when dishonesty would have the greater advantage.

The real reward of honesty is self-respect. However difficult it may be to define honesty in the abstract, each of us knows in his heart what honesty means for himself. Follow that standard unflinchingly and you will keep inviolate the greatest possession you have—your honor.

Jeffisms—*Continued*

A man may be known by the company he keeps but he can certainly be judged by the enemies he makes, you can fool your friends sometimes but your enemies never. All the world over the liar is the enemy of the honest man, the stupid of the wise, the coward of the brave. Pick your enemies carefully, and out in the world, where they go about trying to revile you, they will on the contrary proclaim your merits.

Courtesy simply means acting on the assumption that other people's motives are as honorable as your own.

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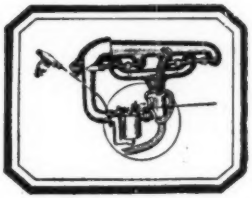

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